Vol. 79, pp. 183–204 15 August 1966

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW TRIBE AND A NEW SPECIES OF OPHIDIOID FISH

By Daniel M. Cohen
Ichthyological Laboratory, Bureau of Commercial Fisheries, Washington, D. C.

Among the shallow-water, viviparous ophidioids with a separate caudal fin and a hard copulatory apparatus, is a group of several genera which are more closely related to each other than to the *Dinematichthys-Ogilbia* group with which some of them have been confused. Even though much is yet unknown about the species and genera, at this stage in our knowledge of these fishes it seems more desirable to emphasize phyletic *differences* rather than *similarities*. Therefore I propose to segregate these forms into a tribe which is diagnosed below.

I am indebted to the following individuals who have assisted me by commenting on parts of the manuscript. Dr. Bruce Collette, Mr. Charles Dawson, Dr. William Gosline, Mr. R. J. McKay, Dr. Victor Springer, and Dr. Boyd Walker. Curators who have helped me by lending specimens are: Dr. James Böhlke, Academy of Natural Sciences of Philadelphia (ANSP); Mr. R. J. McKay, Western Australian Museum (WAM); Prof. J. L. B. Smith, Rhodes University (RU); and Dr. Frank Talbot, South African Museum (SAM) and Australian Museum (AM). Dr. Talbot has been particularly patient with me, in Cape Town and Sydney, and it is a pleasure to name for him the new species described in this paper.

Definitions of terms and abbreviations are given in Cohen (1964).

DERMATOPSINI, new tribe

Type-genus *Dermatopsis* Ogilby, 1896

Diagnosis: Small, secretive, viviparous ophidioids with a single pair of hard genital claspers (Figs. 2, 4, 5); scales nonimbricate or at most barely overlapping; scales probably lacking on head, but if present, only as a few scattered scales, not as a discrete patch; posterior end of maxillary not greatly expanded vertically (Fig. 1A).

Relationships: Dermatopsini is most closely related to the *Dine-*

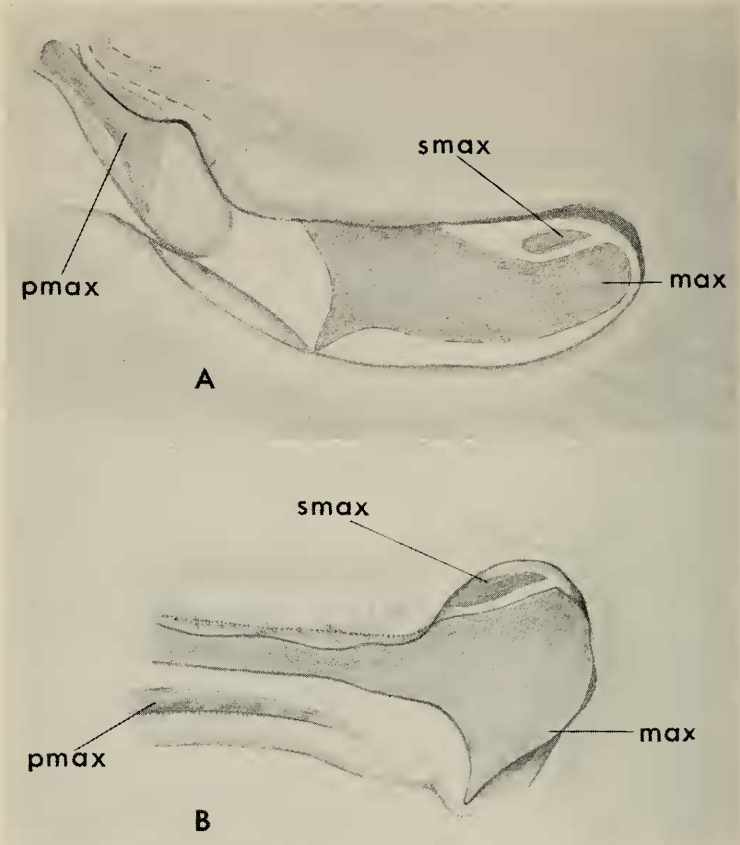

Fig. 1. Alizarin preparations of maxillary bones. Max, maxillary; pmax, premaxillary; smax, supramaxillary. *A.* Horizontally elongated maxillary of *Dermatopsis macrodon,* ANSP-WAS-NZ-1 (see text for data). *B.* Vertically expanded maxillary of *Ogilbia* sp. from USNM 199541, *Te Vega* stat. 106, Indonesia, Mentawei Islands, Pulo Mega; lat. 04°01′S, long. 101°01′30″E. Drawn by Mildred H. Carrington.

matichthys-Ogilbia group, which differs in having multiple pairs of claspers (Turner, 1946), imbricate scales on the body, patches of scales on the head, and the posterior end of the maxillary vertically expanded (Fig. 1B).

Unsolved nomenclatural and zoological problems preclude the presentation of additional discussion or a more formal designation for the *Dinematichthys-Ogilbia* group.

Genera: In addition to the type-genus, I refer to this tribe *Dermatopsoides* Smith, 1947; an as yet undescribed genus from the Gulf of Mexico (Dawson MS); and possibly *Diancistrus* Ogilby, 1898.

Discussion: Four species of small, viviparous ophidioids from the Australia-New Zealand region require comment.

1. *Dinematichthys consobrinus* Hutton, 1875 was described from New Zealand and later figured by Hector (1877). Ogilby (1897) suggested that it might be a species of *Dermatopsis*. The figure shows a relatively short-bodied fish with imbricate scales and the posterior end of the maxillary bone vertically expanded. This species is probably a member of the *Dinematichthys-Ogilbia* group.

2. *Monothrix polylepis* Ogilby, 1897 (monotypic genus) was described from New South Wales and later figured by Whitley (1935). Ogilby suggested relationship with *Dinematichthys piger* Alcock, which he did not think belonged in *Dinematichthys*. The numerous imbricate scales and the shape of the maxillary exclude *M. polylepis* from the Dermatopsini.

Schultz (1960, p. 385) placed *Dermatopsis kasougae* Smith (type-species of *Dermatopsoides*) in the genus *Monothrix*. This would make *Dermatopsoides* a junior synonym of *Monothrix*. On p. 388 of the same paper he listed *Dermatopsoides* as a synonym of *Dinematichthys*. As I show in this paper, these allocations are untenable.

3. *Diancistrus longifilis* Ogilby, 1898 (monotypic genus) was described from Lord Howe Island. I have found no figure or other account of this species in the literature. Schultz (1960) placed *Diancistrus* in the synonymy of *Dinematichthys* with no comment. I believe *Diancistrus* is a valid genus and I tentatively refer it to the Dermatopsini based on the following characters (from the description) in which it resembles several dermatopsine species: head naked, maxillary spatulate, gill membranes united in front, a pair of curved claspers, anal fin united by a membrane to the base of the caudal fin.

4. *Dipulus caecus* Waite, 1905 (monotypic genus) was described and figured from off Fremantle. Waite suggested relationships with the deep sea viviparous ophidioid genera *Aphyonus* Günther and *Sciadonus* Garman. Mees (1962) re-examined the holotype and considered it to represent a species of *Dermatopsis* closely related to *D. multiradiatus* McCulloch and Waite, thus relegating *Dipulus* to the synonymy of *Dermatopsis*. Mees identified a series of specimens from near Perth (Rottnest Island) as *Dermatopsis caecus* (Waite). I quote (p. 28), "The type specimen of *Dipulus caecus* is in the collection of the Western Australian Museum, and although it is in poor condition there can be no doubt about its identity with the fresh material."

I have examined some of Mees' material, and I find it to include three species of ophidioids: a species of *Dinematichthys* (Mees, 1960, reported *D. iluocoeteoides* Bleeker from Rottnest Island); *Dermatopsis multiradiatus;* and *Dipulus caecus*. Mees has confused *D. multiradiatus* and *D. caecus;* my examination of his material shows that these two spe-

cies differ in many characters. Fin ray and vertebral counts on four specimens of *D. caecus* show 173 to 183 dorsal fin rays, 112 to 120 anal fin rays, and 81 to 86 vertebrae (compared with 98 to 114 dorsal, 64 to 72 anal, and 51 to 55 vertebrae in *D. multiradiatus;* see tables 2, 3, and 5 for frequency distributions). *Dipulus caecus* also has a more elongate body with depth at vent 7.2 to 7.6 percent SL (8.8 to 11.7 percent in *D. multiradiatus*); and a proportionately shorter head, 11.5 to 13.1 percent SL (15.9 to 20.2 percent in *D. multiradiatus*). Other differences are: scales absent in *D. caecus,* present in *D. multiradiatus;* claspers broad, complex, and convoluted in *D. caecus,* not as in *D. multiradiatus* (Fig. 4 B). The two species show many other differences in proportions and in the number and position of head pores.

Several items in the original description of *D. caecus* require discussion. Waite described and figured the dorsal and anal fins as continuous with the pointed caudal fin. R. J. McKay of the Western Australian Museum examined the holotype at my request, and he has written to me that, "The holotype has the caudal fin badly damaged but apparently the dorsal and anal fins were joined to the caudal fin *at the base* of the caudal fin only." This agrees with the tail fins of the specimens which I identify as *D. caecus.* Mr. McKay further wrote ". . . I am unable to ascertain whether the caudal fin of the type was as pointed as Waite illustrates." The caudal fin is rounded in my specimens. The original description of *D. caecus* states that external eyes are lacking in the holotype, a circumstance which McKay has confirmed. The specimens that I have examined all have small but conspicuous eyes, and it therefore seems likely that the holotype is aberrant in this respect. Based on the literature, Thines (1955) included *D. caecus* in a list of blind fishes. In a later paper (1960), however, he examined specimens identified as *D. caecus* and noted the existence of small, but well developed eyes. He gave no information on how his specimens were identified and his observations could have been made on *Dermatopsis multiradiatus* rather than on *Dipulus caecus.*

I recognize *Dipulus* as a valid genus. A proper assessment of its relationships requires further study, and for the present I must relegate it to ophidioid limbo.

Genus *Dermatopsis*

Dermatopsis Ogilby, 1896, p. 138 (type-species by monotypy, *Dermatopsis macrodon* Ogilby, 1896).

Diagnosis: Chin barbel absent. Gill membranes broadly joined to isthmus. Livebearing; male genitalia consisting of fleshy hood, two flattened claspers directed laterally at their distal ends, and penis. Ventral fins immediately adjacent to each other, each with single ray, fins not originating immediately behind symphysis of cleithra, but placed about an interorbital distance behind. Caudal fin free, with 16 or more rays; pectoral fin entire, without separate, elongated rays. Scales lacking on

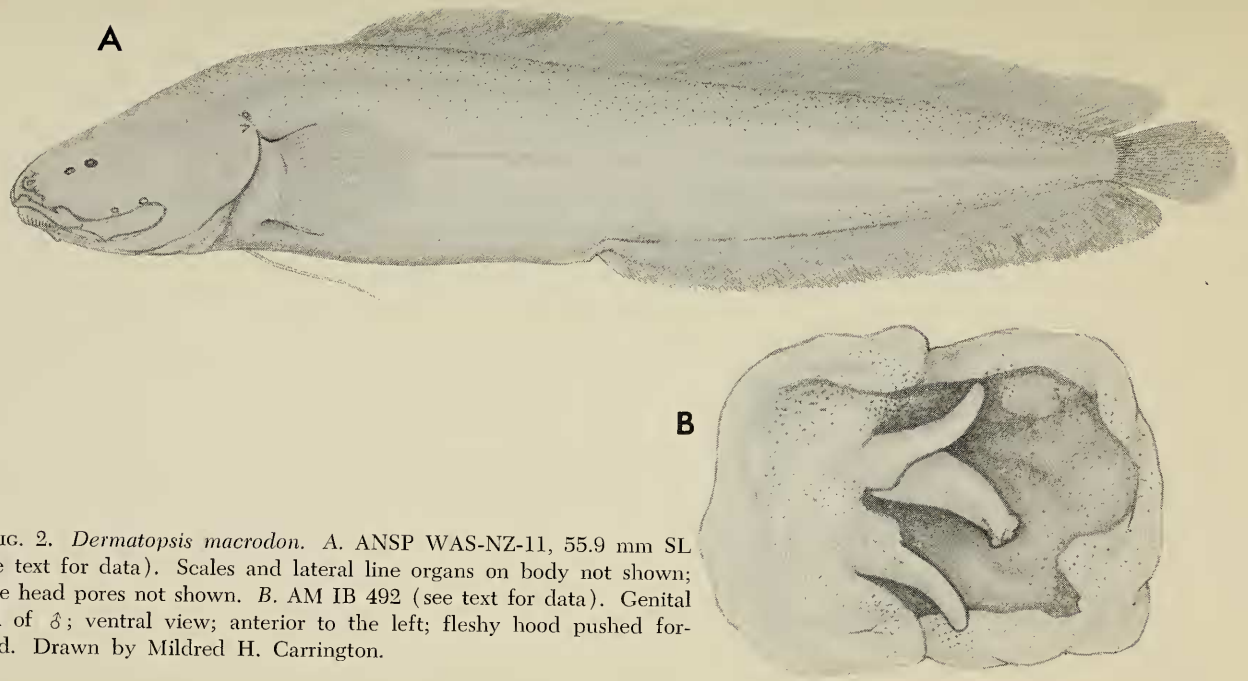

FIG. 2. *Dermatopsis macrodon*. *A*. ANSP WAS-NZ-11, 55.9 mm SL (see text for data). Scales and lateral line organs on body not shown; some head pores not shown. *B*. AM IB 492 (see text for data). Genital area of ♂; ventral view; anterior to the left; fleshy hood pushed forward. Drawn by Mildred H. Carrington.

head, non-imbricate on body. A short, sharp spine at upper angle of opercle. Anterior nostril tubular, located directly above upper lip; gill rakers reduced. Branchiostegal rays 6. Lateral line of minute delicate papillae (not visible in most specimens). Teeth present on premaxillary, vomer, palatine, and dentary; maxillary elongated posteriorly but not vertically expanded. Eyes small. Peritoneum pale.

First neural spine shortest; neural spines on abdominal centra with sharp tips. Vertebrae 1 through 5 or 6 with ribs articulating with centra; parapophyses beginning on centrum 6 or 7.

Description: In addition to the diagnostic characters given above, the following characters are common to the known species and are not repeated in the species accounts. Rounded caudal fin free from dorsal and anal fins in most specimens; however, in a few the fins are joined at their bases. Rays of ventral fins thick proximally but tapering to filamentous tips which do not extend beyond level of posterior end of pectoral fin. Pectoral fin broad and fanlike and inserted vertically on a broad muscle pad.

Head posterior to eyes compressed. Snout slightly depressed. Posterior nostril in front of eye with raised, fleshy rim. Short, tubular anterior nostril at anterolateral corner of snout immediately above lip.

Species: I recognize two. *D. macrodon* has been known heretofore only from New South Wales. I have examined material from North Island, New Zealand as well. The two populations show some differences, and may prove taxonomically separable. *D. multiradiatus* has been known heretofore from Kangaroo Island and the Great Australian Bight. The specimens from near Perth identified by Mees (1960) as *Dermatopsis caecus* (Waite) are both *D. caecus* and *D. multiradiatus*. The Western Australian and South Australian populations of *D. multiradiatus* may be separable.

Dermatopsis macrodon Ogilby

Figs. 1A, 2A, 2B, 3

Dermatopsis macrodon Ogilby, 1896, p. 140 (orig. descr., Maroubra, New S. Wales, near Sydney).—Ogilby, 1897, p. 86 (descr., Maroubra).—Whitley, 1935, p. 239, Fig. 8 (descr., refs., 20 spec. in Australian Museum from vicinity of Sydney).—Thines, 1955, p. 42, 78 (brief descr., listed as blind).

Diagnosis: A *Dermatopsis* with 71 to 80 dorsal rays, 45 to 57 anal rays, 39 to 45 vertebrae, and depth at vent 4.5 to 6.9 in standard length.

Study material: AUSTRALIA, New South Wales, all from near Sydney: AM I.12658, 1 specimen, Maroubra; AM IA.697, 2, Cogee; AM IB.512, 1, Sandor River (under rock); AM IB.7338, 3, inside North Head near Quarantine Beach, Manley; AM IB.492, 1, Vaucluse. NEW ZEALAND, North Island, all from the Bay of Islands and deposited in ANSP; WAS-NZ 11 and 12, 1 specimen, N end of smaller island, just NW

of Urupukapuka Id.; WAS-NZ 5, 1, SE side above small island; WAS-NZ 1, 14 (2 removed for clearing and staining), S end Urupukapuka Id.

Description: Counts and measurements summarized in tables 1 to 5. Body moderately elongate, depth at vent 4.5 to 6.9 in standard length. Body depth greatest at dorsal fin origin, tapering gradually to tail. Greatest body width behind head. Predorsal distance 3 to 4 times in standard length. Anal fin base origin at, or posterior to, midpoint of body. Ventral fins originating posterior to symphysis of cleithra by distance about equal to interorbital space. Pectoral fin 6.2 to 7.9 in standard length, extending at most to point one-half distance from pectoral fin upper angle to anal fin origin.

Scales on body non-imbricate, widely scattered; buried beneath a mucous coat on most specimens; apparently lacking on specimens less than about 30 mm SL. Scales absent on head; however, 1 Australian specimen, I. 12658, with rounded, pitlike structures on head, which resemble empty scale pockets more posteriorly on body. In the original description of *D. macrodon*, Ogilby mentioned scattered scales on the head. Frank Talbot examined the holotype for me and was unable to find either scales or scale pockets on the head.

Eye small, 8 to 14 times in head length, sunk beneath the surface. Most specimens with clear space in skin over eye, about equal in diameter to part of lens protruding through iris; few specimens with clear space over eye larger; eye completely covered with translucent skin in some specimens.

Posterior region of maxillary slightly or not at all sheathed. Prominent toothlike structure projecting down from maxillary at about level of rear margin of eye.

Gill rakers on first gill arch short, stubby, spiny tubercles; 3 or 4 longest on lower arm near angle; anteriorly along gill arch rakers are represented only by spiny bumps.

Premaxillary with band of short, sharply pointed teeth; band extending posteriorly to below eye; several longer teeth near anterior end of premaxillary. Vomer bearing V-shaped patch of unequal sized teeth. Similar teeth on palatines. Dentary bearing broad patch of small teeth anteriorly, similar to premaxillary teeth; extending posteriorly from each patch a single line of widely spaced large teeth interspaced with smaller teeth. No sexual dimorphism in dentition. Small specimens have notably fewer teeth than do large specimens; however, the general pattern of tooth distribution is similar in large and small fish.

The male genitalia (Fig. 2 B) consist of a fleshy hood, a curved papilla or penis which has fleshy, glandular (?) tissue attached to it, and two hard recurved claspers which extend posteriorly and at their distal ends turn laterally or posterolaterally. The claspers are flattened elongate structures. Sizes of papillae and claspers vary considerably; however, the claspers of specimen no. IB 7338 (Australia) are atypical and warrant special comment. They are large, flattened structures which

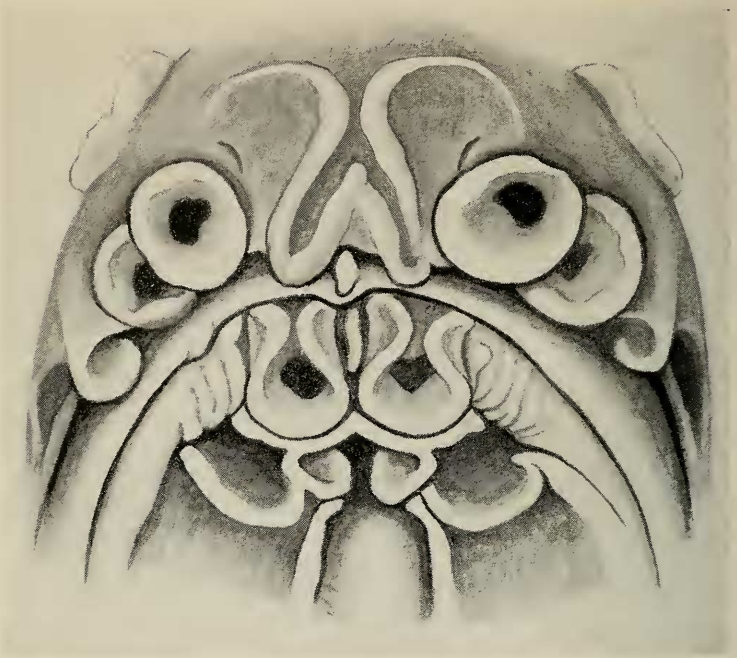

Fig. 3. *Dermatopsis macrodon.* AM IB 492 (see text for data). Anterior view of snout, slightly elevated, showing position of skin folds, pores, and nostrils. Drawn by Mildred H. Carrington.

project posteriorly and then dorsally beyond the margin of the genital hood. This specimen seems to be a typical *D. macrodon* in other respects, and I assume that its claspers are anomalous.

The distribution of lateralis system pores on the head (Fig. 3) is similar in Australian and New Zealand specimens. The lateral canal has a single pore near the upper angle of the gill opening. The supraorbital canal has 2 to 3 pores; one on the edge of the upper lip in front of the anterior nostril, a second, higher on the snout, on the inner edge of a circular ridge of skin surrounding an area of very thin skin, and a third, quite small and not always visible, above and behind the eye. The suborbital canal has 5 pores, 3 in the convoluted skin along the upper lip on the snout, and 2 along the skin over the maxillary behind the level of the eye. The preoperculo-mandibular canal has 7 or 8 pores, 3 in the convoluted skin folds near the lower jaw tip, the others evenly spaced along the inner margin of the ramus of the dentary and the preopercle; the last pore position in the series usually bears 2 pores, sometimes 1. Minute lateral line organs are visible along the sides of only a few specimens. They are in the form of a row of delicate

papillae which originate near the upper angle of the gill slit. The lateral line extends posteriorly above the midline of the body as a row of about a dozen papillae. It descends to the midline slightly posterior to the level of the adpressed pectoral fin and extends to the caudal base as a row of another dozen papillae.

Vertebrae 1 to 5 have ribs articulating with the centra; those on 3 to 5 are pleural ribs; ribs on centrum 3, and to a lesser degree, on 4 are proximally flattened and bladelike; centra 6 to 13 have pleural ribs at ends of parapophyses. Epipleurals associated with pleural ribs on vertebrae 3, 4, 5, and sometimes 6. Thirteen abdominal vertebrae. Ribs on first 2 centra directed posteriorly, unlike pleural ribs on subsequent centra, which are directed ventrally or posteroventrally. The distal ends of the first 2 ribs are in line with the epipleurals of the following ribs. The two sides of the first neural spine are not fused. The above description is based on two cleared and stained specimens, one male and one female, from WAS-NZ 1, and on radiographs of all specimens.

All of the New Zealand specimens are uniformly pale. Some of the Australian specimens are pale anteriorly and dark brown posteriorly. Many specimens are covered with a thick mucous coating which contains many small granules.

Variation: D. macrodon is now known from New Zealand as well as New South Wales. It is to be expected that two populations of a shallow water species separated by 1200 miles of open water will show some morphological differences. Although my material is limited, I find three such differences: (1) Vertebral count—Australian range 39–42, New Zealand range 42–45. See table 5 for frequency distribution. (2) Body depth at vent—8 Australian specimens 30.0 to 57.9 mm SL, body depth ranges from 14.5 to 17.6 percent SL (average 16.3 percent); 8 New Zealand specimens 34.2 to 55.8 mm SL, body depth ranges from 16.7 to 22.3 percent SL (average 18.2 percent); (3) A characteristic feature of most New Zealand specimens, regardless of sex, is the presence of a pronounced rise in the dorsal profile between the rear of the head and the dorsal fin origin (Fig. 2 A). Most Australian specimens have only a gentle upward slope in this region.

Dermatopsis multiradiatus McCulloch and Waite

Figs. 4A, 4B

Dermatopsis multiradiatus McCulloch and Waite, 1918, p. 63, pl. 5, Fig. 4 (orig. descr., Kangaroo Id.).—Hubbs, 1938, p. 289 (discussion).—Scott, 1962, p. 172, Fig. (descr., Kangaroo Id., Cape Jervois).—Mees, 1962, p. 27 (head of Great Australian Bight).

?*Dipulus caecus* Waite, Thines, 1960, p. 45, pl. 1 (discussion of eye).

Dermatopsis caecus (Waite) in part, Mees, 1962, p. 27 (Rottnest Id.; Pt. Quobba, N of Shark Bay, Western Australia).

Diagnosis: A *Dermatopsis* with 98 to 114 dorsal rays, 64 to 72 anal

rays, 51 to 55 vertebrae, and depth at vent 8.5 to 11.4 times in standard length.

Study material: AUSTRALIA, Western Australia, Rottnest Island, east end of Nancy Cove, WAM P.12712–P.12736, 23 specimens; South Australia, Head of Bight, S of Nullarbor, WAM P.4461, 3 specimens.

Description: Counts and measurements summarized in tables 1 to 5. Body elongate, depth at vent 8.5 to 11.4 times in standard length. Body depth greatest along trunk, between nape and vent, tapering gradually from level of vent to caudal peduncle. Greatest body width behind head. Predorsal distance 4 to 5 times in standard length. Anal fin base origin near midpoint of body. Ventral fins originating posterior to symphysis of cleithra by distance slightly less than interorbital width. Pectoral fin 8.5 to 12.7 in standard length, extending one-third to one-fourth distance from pectoral fin upper angle to anal fin origin.

Scales generally non-imbricate, not widely scattered, hidden beneath thick mucous coating and finely punctulate epidermal layer. It is necessary to scrape away congealed mucus and use a compressed air jet on the cleared area before scales can be seen. Scales lacking on head.

Eye small, 10 to 18 times in head length, sunk beneath the surface; eye visible through clear place in skin. In South Australian specimens the lens is opaque white whereas in Western Australian examples it is translucent blue. It seems likely that difference in color is related to preservative as each collection also contains a specimen of *Dinematichthys* with lenses colored like the *Dermatopsis* in the same collection. Thines (1960) studied the eye of a fish which he called *Dipulus caecus* and which may be identical with the species here discussed. He noted that the eye of this fish represents an example of "simple microphtalmy" [sic] rather than true regression.

Dorsal rim of maxillary free at its distal extremity, elsewhere sheathed. There is a blunt, toothlike, ventral projection from the maxillary at about the level of the rear margin of the eye.

Gill rakers low, spiny tubercles, as many as 6 or 7 along lower arm of first gill arch.

Premaxillary with band of short, sharply pointed teeth; band extending posteriorly to beneath posterior nostril. Vomer with triangular patch of teeth similar to premaxillary teeth; in some specimens a few larger teeth present. A band of similar teeth present on palatine. Dentary bearing anteriorly a granular patch of smaller teeth. On inner edge and extending posteriorly from this patch a single line of larger, conical teeth. No sexual dimorphism in dentition.

Male genitalia (Fig. 4 B) consisting of a fleshy hood, a papilla with a strongly recurved tip, which has fleshy, glandular (?) tissue attached to it, and two hard recurved claspers which turn laterally at almost right angles.

Lateral canal with a single pore near the upper angle of the gill opening. Supraorbital canal with 2 pores in the specimen from Western Australia and 3 in South Australian specimens. Fishes from both

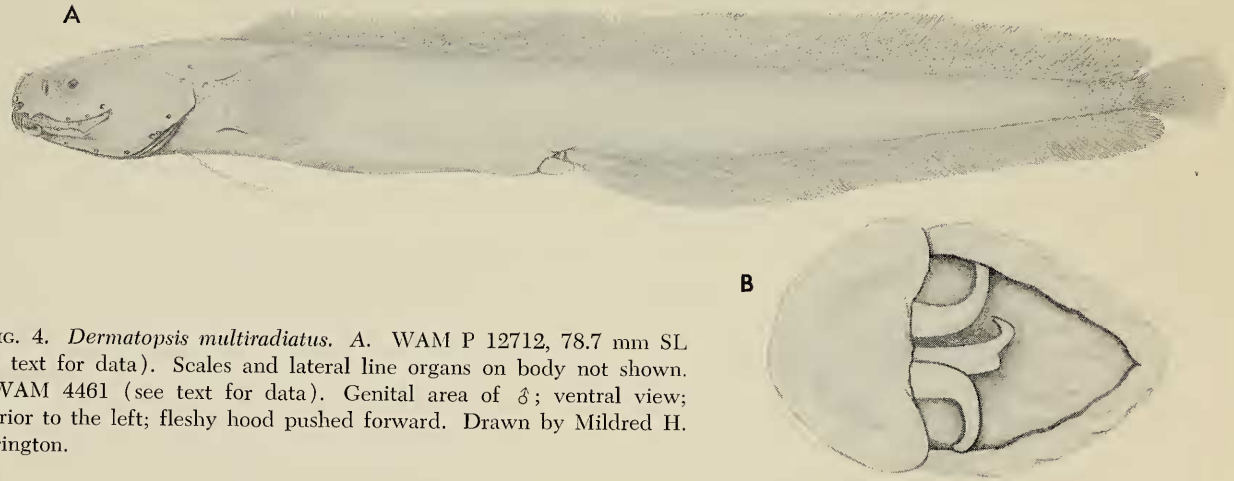

FIG. 4. *Dermatopsis multiradiatus*. *A*. WAM P 12712, 78.7 mm SL (see text for data). Scales and lateral line organs on body not shown. *B*. WAM 4461 (see text for data). Genital area of ♂; ventral view; anterior to the left; fleshy hood pushed forward. Drawn by Mildred H. Carrington.

localities have a pore in the flesh of the upper lip medial to the anterior nostril, and another behind the tube of the anterior nostril on the margin of a semicircular ridge of skin surrounding an area of very thin skin. A third pore of this series, present only in the South Australian specimens, is above and behind the eye. The suborbital canal has 6 pores, 3 in the convoluted skin along the upper lip on the snout and 3 along the skin over the maxillary behind the level of the anterior margin of the eye. The preoperculo-mandibular canal has 9 pores, 3 in the convoluted folds of skin near the lower jaw tip and the others along the inner margin of the ramus of the dentary and the preopercle; pores number 7 and 8 immediately adjacent to each other. The lateral line system along the side of the body is visible in a few specimens only. It consists of an upper section of about a dozen delicate papillae extending posteriorly from near the upper angle of the gill slit to about two-thirds the distance from the rear of the head to the vent, and a lower section of 25 to 30 papillae extending from the level of the termination of the upper line to the caudal fin base.

Vertebrae 1 to 5 have ribs articulating with the centra (based on radiographs). Subsequent abdominal centra have parapophyses, many of which bear ribs. The ribs are slight structures and do not show well on radiographs, and I cannot say whether they are present at the ends of all parapophyses. The two sides of the first neural spine are not fused.

The color is orange-brown; the South Australian specimens are slightly paler. A thick mucous coating, in which is embedded small orange granules, covers both the body and head. Beneath the mucous coating are numerous small, dark chromatophores which are externally visible only near the caudal fin base and along the dorsal fin base.

Variation: Mees (1962) referred South Australian and Western Australian material to different species, although he suggested they might represent subspecies rather than species. He listed three differences between the populations: degree of squamation and relative body depth (both of which I have been unable to verify) and color—possibly a function of preservation. The previously noted presence of a pore above and behind the eye in the South Australian specimens and its absence in the Western Australian material is the only character I have found which separates the material examined. As I have only three specimens in my South Australian sample, I prefer to consider the two populations conspecific.

Genus *Dermatopsoides*

Dermatopsoides Smith, 1947, p. 361 (type-species by original designation *Dermatopsis kasougae* Smith, 1943).

Diagnosis: Chin barbel absent. Gill membranes attached anteriorly to isthmus. Livebearing; male genitalia consisting of fleshy hood, two rounded, recurved, ossified claspers directed dorsally at their distal ends, and a penis. Pelvic fins immediately adjacent to each other, each with

single ray, fins not originating immediately behind symphysis of cleithra but placed about an interorbital distance behind. Caudal fin with 16 or more rays, not joined with dorsal and anal fins although in some specimens short membranes may reach between bases of dorsal and anal fins and caudal fin; pectoral fin entire, without separate, elongated rays. Scales lacking or widely scattered on head and nonimbricate or absent on body. No spine on opercle. Anterior nostril tubular, located directly above upper lip; gill rakers reduced. Branchiostegal rays 6. Lateral line consisting of very small dermal papillae (difficult to see in some specimens). Teeth present on premaxillary, vomer, palatine, and dentary; maxillary elongated posteriorly but not vertically expanded, sheathed in a fold of skin distally. Eyes small. Peritoneum pale.

First neural spine shortest; neural spines on abdominal centra with sharp tips. Vertebrae 1 through 5 or 6 with ribs articulating with centra; parapophyses beginning on centrum 6 or 7.

Species: Two species are known, both from South Africa. One is herein described for the first time. The distribution of these species falls within the region which Stephenson (1947, Fig. 2) assigned to the warm temperate Cape fauna; more specifically, they are probably part of his south coast (Stephenson, 1947, pl. 16) component. Smith (1946, Fig. 1) showed the distribution of South African clinids, and his list included four species with an even wider distribution than *D. talboti*.

Dermatopsoides talboti, new species

Figs. 5A, 5B

Dermatopsoides kasougae Smith, 1949, p. 361, in part (brief description, Port Alfred to Bushman's River, Cape; *D. kasougae* is known only from the holotype; other specimens are *D. talboti*.

Diagnosis: A species of *Dermatopsoides* with no scales, 59 to 80 dorsal fin rays, 36 to 54 anal fin rays, and 17 to 18 pectoral fin rays. The eye goes into head length more than 15 times and the pelvic fin is no more than half the head length and does not extend beyond the posterior end of the pectoral fin.

Study material: SOUTH AFRICA, holotype, RU B. 59, ♂, 40.4 mm SL, Bird Island, Algoa Bay. Paratypes, RU B. 59, 1 spec., data as for holotype; SAM 21800, 1 spec., Somerset Strand, False Bay; USNM 199732, 1 spec., Simonstown, False Bay; SAM 21493, 1 spec., Saldanha Bay; SAM 21693, 1 spec., no data.

Description: Counts and measurements in tables 1 to 5. Body moderately elongate, depth at vent 5.8 to 8.3 in SL. Body depth about equal from level of nape to level of vent, tapering to tail. Greatest body width in region of belly between nape and vent, tapering thence to tail.

Dorsal fin origin on anterior third of body; anal fin origin posterior to midpoint of body. Vertical fins of some specimens covered with translucent skin, individual fin rays not easily visible; on other specimens skin

over fins clear. Dorsal and anal fins not continuously connected with caudal fin along their entire heights; however, membranes may be present at bases of last dorsal and anal rays connecting them with the caudal peduncle, or in some fish, with bases of dorsal and ventral rays of caudal fin. Caudal fin rounded. The single ray of each pelvic fin thick proximally, but tapering to filamentous tips which do not extend beyond level of posterior end of pectoral fin; pelvic fins originating posterior to symphysis of cleithra by a distance about equal to interorbital space. Pectoral fins inserted vertically on broad muscle pad; fins 6.4 to 8.1 in SL, extending about one-half of distance from pectoral fin upper angle to vent.

Eye tiny, skin-covered, sunk beneath surface of head, 16 to 30 times in head. A chromatophore-free porthole, in some specimens transparent, in others translucent, covering eye.

Head compressed, deeper than wide. Posterior nostril in front of eye, with raised, fleshy rim; short, tubular anterior nostril at anterolateral corner of snout immediately above lip.

Maxillary elongated posteriorly, not vertically expanded; posterior projection almost completely sheathed. The crease between snout and upper jaw interrupted by a broad frenum connecting suborbital area with anterior part of maxillary.

Gill rakers short, stubby tubercles, 3 or 4 on the upper arm of first arch and as many as 8 or 9 on lower. Tubercles progressively smaller anteriorly on each arm.

Premaxillary bearing short, pointed teeth which extend posteriorly in a line reaching only to level of anterior margin of eye. Cluster of similar teeth present at symphysis of dentaries; row of 8 to 10 larger pointed teeth extending posteriorly along dentary. Vomer with broadly V-shaped band of about 10 pointed teeth; about 8 or 9 similar teeth extending posteriorly in single row along palatines. No sexual dimorphism in dentition.

Male genitalia (Fig. 5 B) consisting of a fleshy hood; an elongate papilla or penis which has fleshy, glandular (?) tissue attached to it; and two hard, recurved claspers. The claspers extend posteriorly and turn dorsally at their distal ends.

The lateralis system is difficult to see, and only a few observations were possible. The lateral canal has a single pore, near the upper angle of the gill opening; the supraorbital canal apparently has a single pore, on the snout near the anterior nostril; the infraorbital canal has at least 5 pores, including 2 very large ones on the snout; and the preoperculomandibular canal appears to have at least 6 or 7 pores, including some very large ones with fleshy, convolute margins near the lower jaw tip. Small and inconspicuous papillae mark the course of the lateral line along the body. The line originates near the upper angle of the opercle and descends to the midline of the body between the level of the posterior end of the pectoral fin and the level of the vent. One speci-

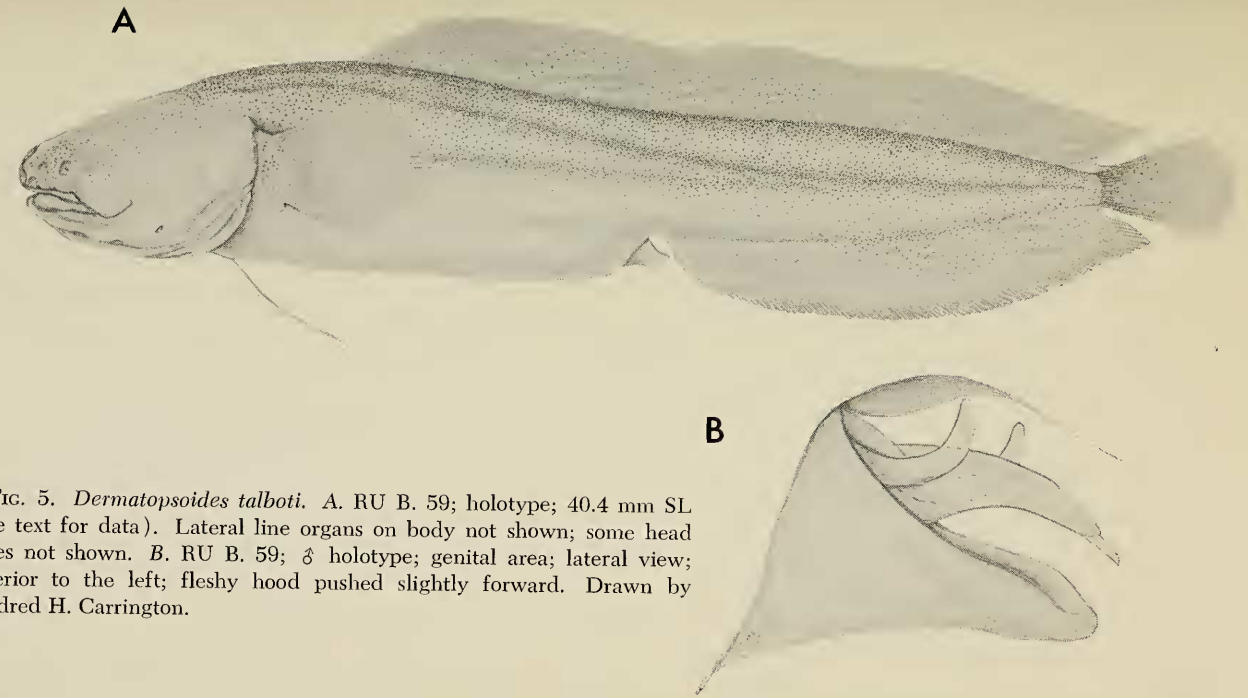

FIG. 5. *Dermatopsoides talboti*. *A*. RU B. 59; holotype; 40.4 mm SL (see text for data). Lateral line organs on body not shown; some head pores not shown. *B*. RU B. 59; ♂ holotype; genital area; lateral view; anterior to the left; fleshy hood pushed slightly forward. Drawn by Mildred H. Carrington.

men had about 20–25 papillae, another had 23. Papillae were not visible in the other specimens.

Vertebrae 1 to 5 have ribs articulating with the centra; 6 to 10, 11, or 12 have pleural ribs at the ends of parapophyses. Epipleurals are associated with at least some ribs; however, precise observations were not possible from radiographs.

Preserved specimens are pale. Small, dark chromatophores are distributed along the dorsal part of the head and trunk and on the side of the body behind the level of the vent. An entry in the fish catalog of the South African Museum noted that specimen number 23256 was "red in color."

Variation: The considerable meristic variation among specimens from widely separated localities suggests that when additional material is available subspecies may be demonstrable. The two specimens from Bird Island (at the east end of Algoa Bay) are geographically closer to the known locality for *D. kasougae*. However, they are meristically quite widely separated from it, while the west coast Saldanha Bay specimen of *D. talboti*, which is geographically farthest from the type-locality of *D. kasougae*, is closest to it in counts.

Dermatopsoides kasougae (Smith)

Dermatopsis kasougae Smith, 1943, p. 72, Fig. 3 (orig. descr.).

Dermatopsoides kasougae Smith, 1947, p. 344 (new genus proposed).—Smith, 1949, p. 361, *in part* (brief descr., Port Alfred to Bushman's River, Cape; *D. kasougae* is known only from the holotype, the other specimens mentioned are *D. talboti*).

Diagnosis: A species of *Dermatopsoides* with non-imbricate scales on body, 100 dorsal fin rays, 71 anal fin rays, and 24 pectoral fin rays. The eye goes about 10 times in head length, and the pelvic fin is more than half the head length and extends beyond the posterior end of the pectoral fin.

Study material: The holotype, a male, from the mouth of the Kasouga River, west of Port Alfred.

Description: Counts and measurements in tables 1 to 5. The single known specimen is in poor condition, and I can add only a few items to the original description.

Although not shown in the original figure of the holotype, there are, as Smith noted in his written description, membranes connecting the bases of the posteriormost dorsal fin ray with the dorsalmost caudal fin ray and the posteriormost anal fin ray with the ventralmost caudal fin ray. Smith described the distribution of scales as follows, "The head is entirely naked. Minute very indistinct cycloid scales buried in a thick dermal layer over the whole body to the nape. It is only on the nape that they appear to be slightly diffuse, but as far as may be observed, on the rest of the body they are normally and regularly imbricate." I have examined the squamation using a compressed air jet, and I find the scales everywhere non-imbricate. They are more widely scattered

and more deeply embedded on the nape. C. Dawson examined the holotype and pointed out to me structures in the interorbital area which he believes to be scales or scale pockets. On the basis of the condition in this single specimen I prefer not to comment on whether the head has scales. Vertebrae 45.

Literature Cited

Cohen, Daniel M. 1964. A review of the ophidioid fish genus Oligopus with description of a new species from West Africa. Proc. U. S. Nat. Mus., 116: 1–22, pls. I–V.

Hector, James. 1877. Notes on New Zealand ichthyology. Trans. New Zealand Inst., 9: 465–469, pls. 9–10.

Hubbs, Carl L. 1938. Fishes from the caves of Yucatan. Carnegie Inst. Washington Publ. 491: 261–295, pls. 1–4.

Hutton, F. W. 1875. Contributions to the ichthyology of New Zealand. Trans. New Zealand Inst., 8: 209–218.

McCulloch, Allan R. and Edgar R. Waite. 1918. Some new and little-known fishes from South Australia. Rec. South Australian Mus., 1: 39–78, pls. 2–7.

Mees, G. F. 1960. Additions to the fish fauna of Western Australia—2. Fish Bull. West. Aust. Fish. Dept., 9: 13–21.

————. 1962. Additions to the fish fauna of Western Australia—3. Fish Bull. West. Aust. Fish. Dept., 9: 23–30, 1 pl.

Ogilby, J. Douglas. 1896. Descriptions of two new genera and species of Australian fishes. Proc. Linn. Soc. New South Wales, 21: 136–142.

————. 1897. New genera and species of Australian fishes. Proc. Linn. Soc. New South Wales, 22: 62–95.

————. 1898. Additions to the fauna of Lord Howe Island. Proc. Linn. Soc. New South Wales, 23: 730–745.

Schultz, Leonard P. 1960. Family Brotulidae *in* Fishes of the Marshall and Marianas Islands. Bull. U. S. Nat. Mus., 202 (2): 382–389, Fig. 128.

Scott, Trevor D. 1962. The marine and fresh water fishes of South Australia. Adelaide. 338 pp.

Smith, J. L. B. 1943. Interesting new fishes of three genera new to South Africa, with a note on *Mobula diabolus* (Shaw). Trans. Roy. Soc. South Africa, 30: 67–77.

————. 1946. The fishes of the family Clinidae in South Africa. Ann. Mag. Nat. Hist., 11 (12): 535–546.

————. 1947. Brief revisions and new records of South African marine fishes. Ann. Mag. Nat. Hist., 11 (14): 335–346.

————. 1949. The sea fishes of Southern Africa. Cape Town. 550 pp., 102 pls.

Stephenson, T. A. 1947. The constitution of the intertidal fauna and flora of South Africa, pt. 3. Ann. Natal. Mus., 11: 207–324, pls. 15–16.

Thines, G. 1955. Les poissons aveugles (I). Ann. Soc. Roy. Zool. Belgique, 86 (1): 5–128.

————. 1960. Sensory degeneration and survival in cave fishes *in* Sensory Specialization In Response To Environmental Demands. Symp. Zool. Soc. London, 3: 39–52, pls. 1–2.

Turner, C. L. 1946. Male secondary sexual characters of *Dinematichthys iluocoeteoides*. Copeia, 1946: 92–96, pl. I.

Waite, Edgar R. 1905. Notes on fishes from Western Australia. Rec. Australain Mus., 6: 55–82, pls. 8–17.

Whitley, Gilbert P. 1935. Studies in ichthyology. No. 9. Rec. Australian Mus., 19: 217–250, pl. 18.

TABLE 1. Summary of proportional measurements on dermatopsine fishes.

	Dermatopsis macrodon						*Dermatopsis multiradiatus*				*Dermatopsoides*			
	Australia			New Zealand			S. Aust.	W. Aust.			*kasougae*	*talboti*		
	$\bar{x}$%	Range%	*N*	$\bar{x}$%	Range%	*N*	%	$\bar{x}$%	Range%	*N*	%	$\bar{x}$%	Range%	*N*
Standard length		30.0–68.5			25.1–55.9		74.9		52.0–95.8		63.3		26.6–50.9	
Head length	22.6	21.2–25.3	8	22.7	21.5–24.3	8	16.3	17.4	15.9–20.2	17	24.0	23.3	22.0–26.7	6
Eye diameter	2.2	1.7–2.7	7	2.4	2.1–2.8	8	1.1	1.2	1.0–1.6	14	2.4	1.1	0.74–1.4	6
Snout length	5.5	4.7–7.0	7	5.9	5.3–6.8	8	4.1	3.5	2.8–4.1	17	4.3	5.0	4.3–5.3	6
Postorbital length	15.9	15.1–17.3	7	15.4	14.7–16.1	8	10.3	12.0	10.5–13.4	17	13.6	16.4	14.7–17.8	6
Predorsal length	29.2	27.9–31.0	6	30.4	28.4–33.0	7	21.4	22.6	20.3–24.9	17	26.2	31.0	28.5–33.1	5
Preanal length	53.6	50.6–55.8	8	51.3	50.5–52.3	7	53.0	51.4	48.1–54.0	17	49.9	55.2	52.2–59.5	5
Preventral length	18.5	17.4–20.4	7	19.5	16.6–22.5	8	13.8	13.8	12.3–15.2	17	17.1	19.2	17.1–21.8	6
Body depth	16.4	14.5–17.6	7	18.1	16.7–22.3	7	11.3	10.2	8.8–11.7	14	16.3	14.6	12.0–17.2	5
Pectoral length	13.5	11.2–16.3	6	13.9	12.6–15.7	6	8.3	9.4	7.9–11.3	15	11.8	13.9	12.4–15.3	6
Ventral fin length	12.9	11.2–16.0	7	13.9	12.3–14.9	8	7.9	10.0	7.5–14.1	15	18.8	11.6	7.9–13.4	4

TABLE 2. Frequency distribution of dorsal fin ray counts in dermatopsine fishes.

	Dermatopsis macrodon		*Dermatopsis multiradiatus*		*Dermatopsoides*	
	Australia	New Zealand	S. Australia	W. Australia	*kasougae*	*talboti*
Dorsal rays						
59						1
60						1
61						
62						
63						
64						1
65						1
66						
67						1
68						
69						
70						
71	2					
72						
73	1					
74		2				
75	2	2				
76		3				
77	1					
78		1				
79		2				
80	1	2				1
98				1		
99						
100					1	
101						
102						
103						
104				2		
105			1	2		
106			1	2		
107				3		
108				1		
109				2		
110				1		
111			1			
112						
113						
114				1		

TABLE 3. Frequency distribution of anal fin ray counts in dermatopsine fishes.

	Dermatopsis macrodon		*Dermatopsis multiradiatus*		*Dermatopsoides*	
	Australia	New Zealand	S. Australia	W. Australia	*kasougae*	*talboti*
Anal rays						
36						1
37						
38						
39						
40						
41						
42						1
43						
44						3
45	1					
46						
47						
48						
49	2					
50	1	1				
51	1	2				
52	1					
53	1	3				
54		1				1
55		3				
56	1					
57		2				
58						
59						
60						
61						
62						
63						
64			1	1		
65			1			
66			1			
67				1		
68				3		
69				3		
70				3		
71				3	1	
72				2		

TABLE 4. Frequency distribution of pectoral fin ray counts in dermatopsine fishes.

	Dermatopsis macrodon		*Dermatopsis multiradiatus*		*Dermatopsoides*	
	Australia	New Zealand	S. Australia	W. Australia	*kasougae*	*talboti*
Pectoral rays						
17						5
18						1
19		4		1		
20	1	4	2	1		
21	4	4		5		
22	1			12		
23	1			2		
24					1	

TABLE 5. Frequency distribution of vertebrae in dermatopsine fishes.

	Dermatopsis macrodon		*Dermatopsis multiradiatus*		*Dermatopsoides*	
	Australia	New Zealand	S. Australia	W. Australia	*kasougae*	*talboti*
Vertebrae						
37						1
38						1
39	1					3
40	1					
41	3					
42	3	2				
43		10				1
44						
45		2			1	
46						
47						
48						
49						
50						
51			1			
52						
53			1	6		
54			1	7		
55				4		